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PROVISIONAL SPECIFICATION.

Communicated from abroad by CHARLES FREEMAN BROWN of No. 53 State Street, Boston in the County of Suffolk and State of Massachusetts, United States of America, Gentleman.

**"Improvements in Elastic Cushion Treads for Boots and Shoes, Crutches and the like."**

I, HENRY HARRIS LAKE, of the Firm of Haseltine, Lake & Co., Patent Agents, 45 Southampton Buildings, in the County of Middlesex, do hereby declare the nature of this invention to be as follows:—

- This invention relates to elastic or cushioned treads, such as elastic-rubber  
 5 heel-shaped cushions or lifts, which are now considerably used on the heels of boots and shoes, such elastic lifts constituting the tread or bottom portion of the heel, and coming in contact with the pavement when the wearer walks. These elastic treads are usually made of vulcanized india-rubber, a material which is quite liable to slip when pressed against a wet or muddy pavement.  
 10 The invention, which may be embodied also in other elastic or cushioned treads, such as rubber soles for the fore parts of boots and shoes, and rubber tread-pieces used on crutches, canes, *etc.*, has for its object to enable the elastic tread-piece to cling firmly than heretofore to wet and slippery pavements and other surfaces, without sacrificing to any material extent the elasticity of  
 15 the tread-piece.

The invention consists in the improved elastic or cushioned tread which will be hereinafter described.

- The improved elastic or cushioned tread comprises a body portion of suitable form and thickness, made of suitably elastic material, such as vulcanized rubber,  
 20 having a tread surface which bears on the pavement when the device is in use. A recess is formed in the lower portion of said body, said recess being preferably circular, and extending preferably about half-way through the body, or from the bottom about half-way to the top surface. In this recess is inserted a frictional plug composed of layers or convolutions of textile fabric, such as cotton duck  
 25 or canvas, the layers or convolutions being assembled in such manner that their lower edges collectively form a part of the tread surface. The plug is preferably formed by taking a strip of the textile fabric, and winding it to form a closed coil or cylinder, the edges of the strip forming the ends of the cylinder. The strip is preferably cut so that the warp and weft threads extend diagonally or  
 30 obliquely across the strip, and cannot therefore be unravelled from the strip. The strip is saturated with rubber cement, or a solution of unvulcanized rubber, before it is wound, so that the vulcanizing process to which it is subsequently subjected cures the said cement and causes the convolutions to adhere firmly together. The length of the cylinder, or the distance between its ends, is  
 35 preferably about equal to the depth of the said recess in the body, and its diameter is such that it closely fills the recess. The body is formed with the described recess, from unvulcanized rubber, and after the said plug is inserted in the recess, the whole is vulcanized, thus causing the plug to adhere firmly to the walls of the recess, the outer end of which is surrounded by the material of the  
 40 body, so that the friction-plug is surrounded except at its lower end, by the elastic body, the latter forming a confining wall which encloses the perimeter of the plug. When the elastic body is a sole or heel cushion, suitable orifices are or may be provided for the reception of attaching nails or screws, and if desired, metal washers or plates may be embedded in the body, between its

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bottom and top surfaces, said washers having holes which coincide with the nail-holes of the elastic body and engage the heads of the attaching nails or screws.

The body may have one or more of the said plugs, one plug being usually sufficient for a heel-cushion or a crutch tread-piece, while a plurality of plugs are desirable in a sole-cushion. A crutch tread-piece embodying the invention will have suitable means of attachment to a crutch-stick.

The lower edges of the fabric layers or convolutions forming parts of the tread surface are very effective in preventing the elastic body from slipping on a wet or muddy surface on which it bears. The diagonal arrangement of the threads is important, for if either the warp or weft threads were parallel with the edges of the strip, the strip would ravel out rapidly, the said diagonal arrangement preventing any ravelling. The plug may be formed by assembling straight layers extending crosswise of the plug, the latter being of rectangular form.

Instead of forming a plug by assembling layers side by side, in contact with each other, the layers may be arranged singly; that is to say, a narrow slot may be formed in the elastic body, of sufficient width to receive a single independent strip, set edgewise into the body, the threads of the strip being diagonally arranged, and its lower edge forming a part of the tread surface. There may be any desired number of these independent strips in one body.

Dated this 12th day of November 1901.

HASELTINE, LAKE & Co.

45 Southampton Buildings, London, W.C. Agents for the Applicant.

## COMPLETE SPECIFICATION.

**"Improvements in Elastic Cushion Treads for Boots and Shoes,  
Crutches and the like".**

I, HENRY HARRIS LAKE, of the Firm of Haseltine, Lake & Co., Patent Agents, 45 Southampton Buildings, in the County of Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to elastic treads, such as elastic-rubber heel-shaped cushions or lifts, which are now considerably used on the heels of boots and shoes, such elastic lifts constituting the tread or bottom portion of the heel, and coming in contact with the pavement when the wearer walks. These elastic treads are usually made of vulcanized india-rubber, a material which is quite liable to slip when pressed against a wet or muddy pavement.

The invention, which may be embodied also in other elastic treads, such as rubber soles for the fore parts of boots and shoes, and rubber tread-pieces used on crutches, canes, *etc.*, has for its object to enable the elastic tread-piece to cling more firmly than heretofore to wet and slippery pavements and other surfaces, and to increase its durability without sacrificing to any material extent the elasticity of the tread-piece.

The invention consists in the improved elastic tread which will be hereinafter described.

Of the accompanying drawings, forming a part of this specification,—

Figure 1 represents a bottom plan view of a heel-tread embodying the invention.

Figure 2 represents a section on line 2—2 Figure 1.

Figure 3 represents a perspective view, showing the frictional plug partially unrolled.

Figure 4 represents a sectional view of an elastic crutch-tip embodying the invention.



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The same reference characters indicate the same parts in all the figures.

The improved elastic tread comprises a body portion *a* of suitable form and thickness, made of suitably elastic material, such as vulcanized rubber, having a tread surface which bears on the pavement when the device is in use. In the  
 5 body *a* is inserted a frictional plug *b* composed of layers or convolutions of textile fabric, such as cotton duck or canvas, the layers or convolutions being assembled in such manner that their lower edges collectively form a part of the tread surface. The plug is preferably formed by taking a strip of the textile fabric, and winding it to form a closed coil, as shown in Figure 3, the  
 10 edges of the strip forming the ends of the plug. The strip is cut so that the warp and weft threads or strands extend diagonally or obliquely across the strip, as shown by the diagonal lines on Figure 3. The said threads or strands therefore extend through the plug, in directions causing them to approach the tread surface of the tread diagonally. In other words, the threads or strands of  
 15 the textile material extend diagonally to the tread surface of the tread. In consequence of this arrangement, the threads cannot be unravelled from the strip, and the tread surface of the plug wears evenly. The strip is saturated with rubber cement, or a solution of unvulcanized rubber, before it is wound, so that the vulcanizing process to which it is subsequently subjected cures the  
 20 said cement and causes the convolutions to adhere firmly together.

The body is formed from unvulcanized rubber, and after the said plug is inserted in the body, the whole is vulcanized, thus causing the plug to adhere firmly to the body, the latter forming a confining wall which encloses the perimeter of the plug. When the elastic body is a sole or heel cushion, suitable  
 25 orifices are or may be provided for the reception of attaching nails or screws, and if desired, metal washers or plates *p* may be embedded in the body, between its bottom and top surfaces, said washers having holes which coincide with the nail-holes of the elastic body and engage the heads of the attaching nails or screws.

30 The body may have one or more of the said plugs, one plug being usually sufficient for a heel-cushion or a crutch tread-piece, while a plurality of plugs are desirable in a sole-cushion. A crutch tread-piece embodying the invention will have suitable means of attachment to a crutch-stick, as shown in Figure 4.

The lower edges of the fabric layers or convolutions forming parts of the  
 35 tread surface are very effective in preventing the elastic body from slipping on a wet or muddy surface on which it bears. The diagonal arrangement of the threads is important, for if either the warp or the weft threads were parallel with the edges of the strip, the strip would ravel out rapidly. The said diagonal arrangement, on the other hand, prevents any raveling. The plug may be  
 40 formed by assembling straight layers extending crosswise of the plug, the latter being of rectangular form.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, as communicated to me by my foreign correspondent, I declare that what I claim is:

45 1. A tread provided with a body portion of vulcanized rubber, and plugs of vulcanized rubber intimately associated with textile material, the threads or strands of the textile material extending through the plugs in directions to approach the tread surface of the tread diagonally, substantially as described.

50 2. A rubber tread, having a plug of textile material and rubber vulcanized therein, the plug being formed of layers of textile material and rubber, the threads or strands of the textile material extending diagonally to the tread-surface of the tread, substantially as described.

Dated this 12th day of August 1902.

HASELTINE, LAKE & Co.

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45 Southampton Buildings, London, W.C. Agents for the Applicant.

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FIG. 1

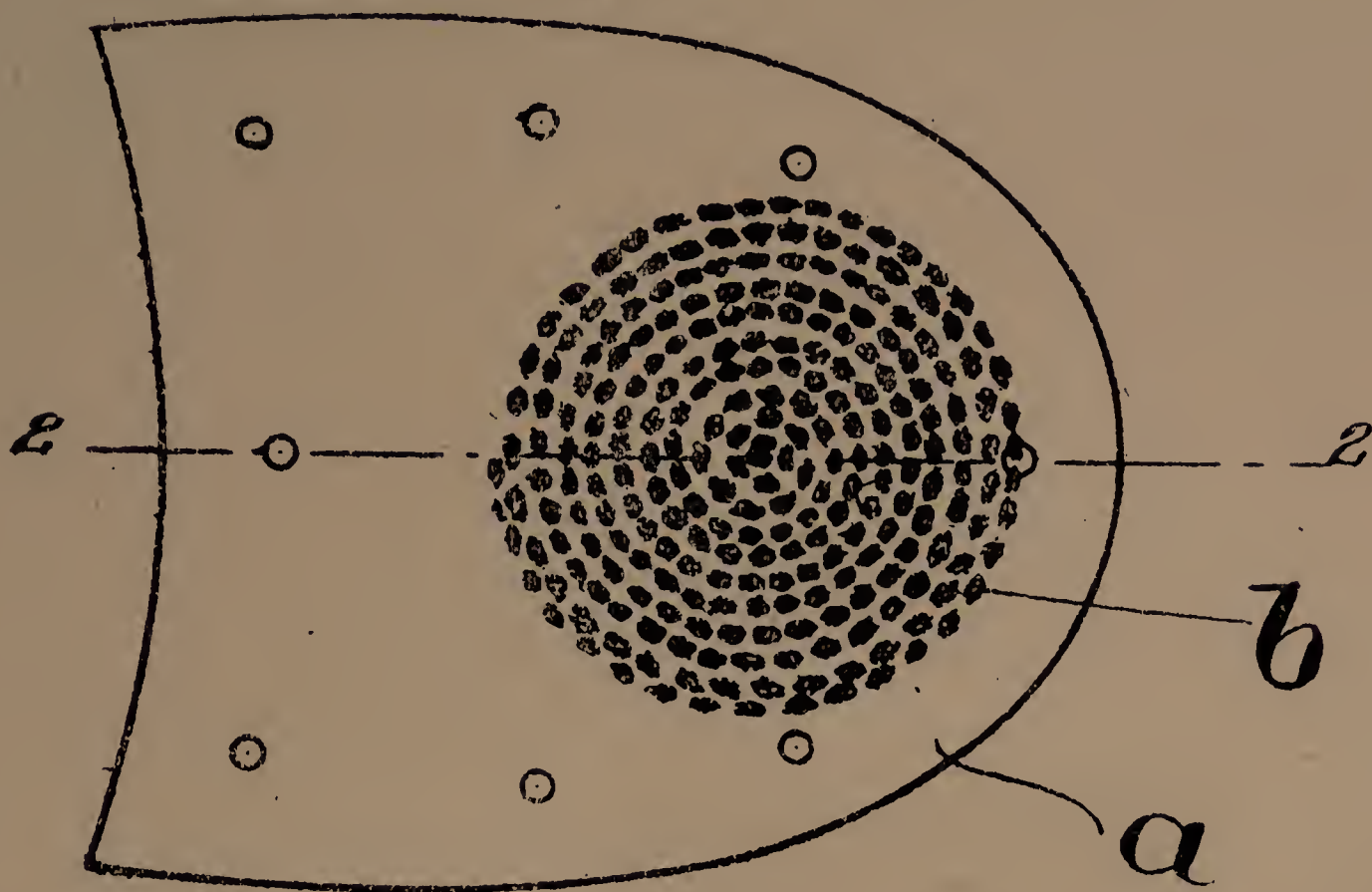


FIG. 2.

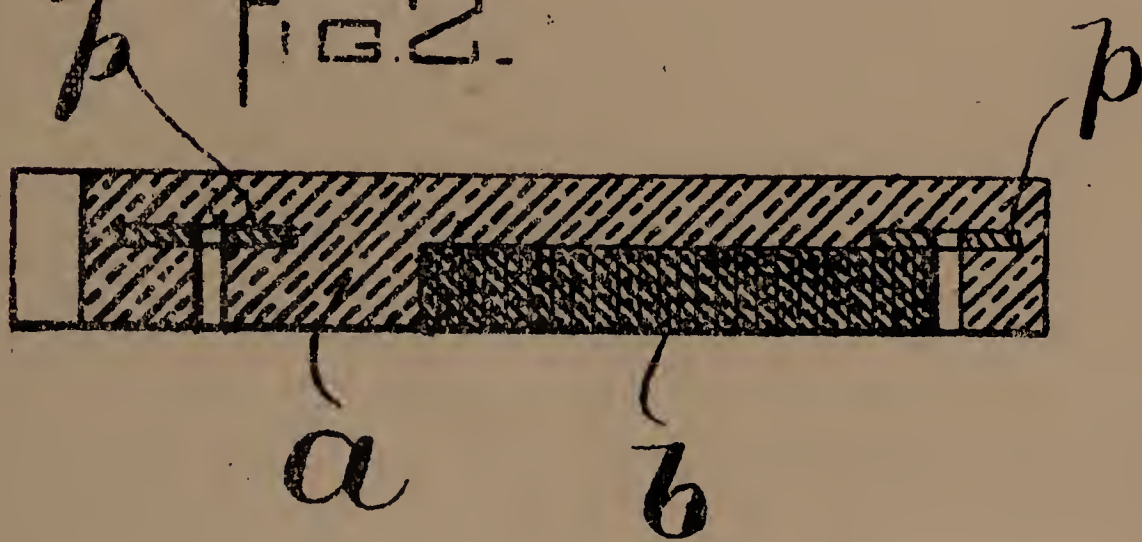
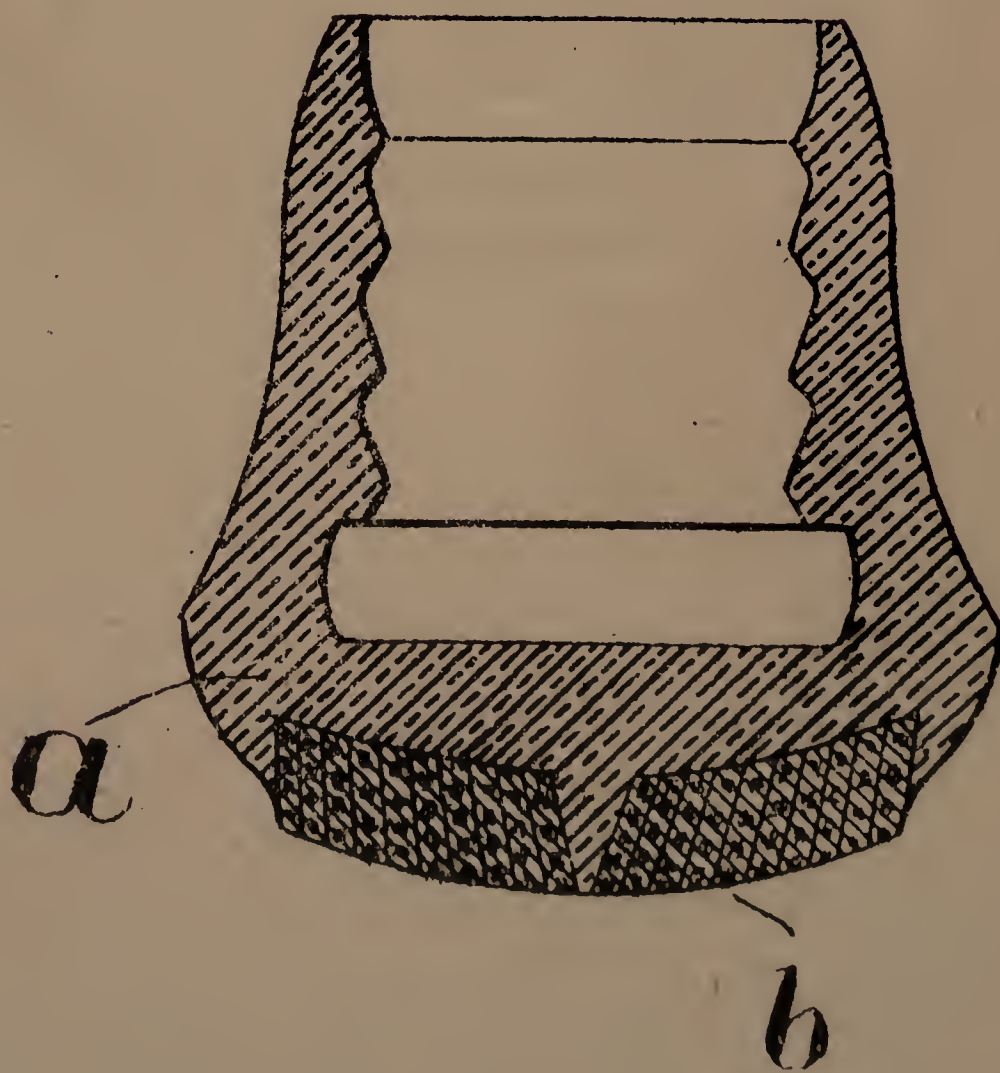


FIG. 4

FIG. 3.



[This Drawing is a reproduction of the Original on a reduced scale]

